POTTER

PRODUCT DATA
1-207

FT-151 AND FT-152 DIGITAL MAGNETIC RECORDING SYSTEMS

POTTER INSTRUMENT CO., INC.

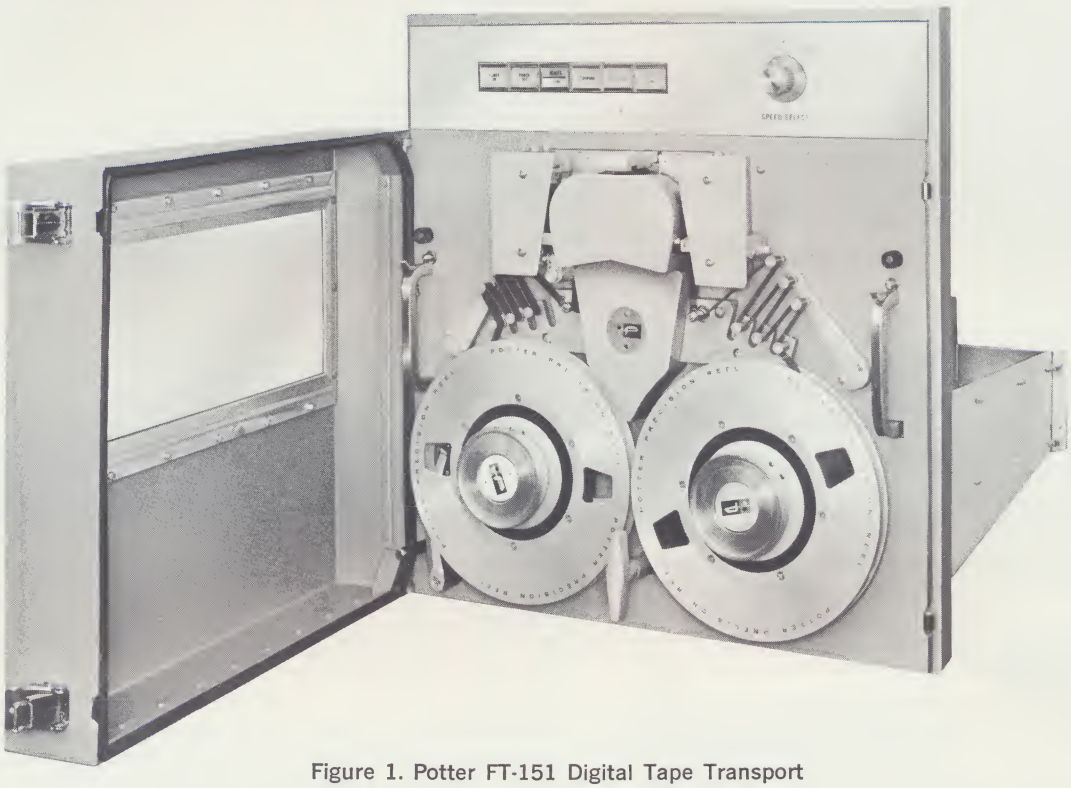


Figure 1. Potter FT-151 Digital Tape Transport

FEATURES

- Operates from 12V battery
- Tape speeds from 15 to 150 ips. Three independent speeds
- Reliable data transfer to 120 kc.
- IBM 7- or 9-channel (System 360, ASCII or TIAC) compatibility
- Packing densities to 800 bpi
- Rugged construction
- Small Size
- Low power
- Shock and vibration resistant for truck or shipboard application
- Full tape width Erase head
- Low tape sensing
- Low interchannel time displacement obtained with precision tape-trough guides
- Convenient arm retraction system for easy, smooth tape loading and threading

INTRODUCTION

Potter FT-151 and FT-152 Digital Magnetic Tape Transports are rugged, compact recording systems designed for geophysical, mobile, and shipboard field recording applications. Potter's extensive design experience with IBM-compatible, high-performance digital tape transports and systems has been incorporated into these ruggedized systems. Units equipped with 21-channel dual gap head assemblies, TIAC-compatible, are also available.

The entire system is packaged to withstand adverse environmental conditions encountered in field seismic exploration operations. The transport operates directly from a 12 volt battery. Power consumption is extremely conservative for the high performance obtained.

EFFECTIVE JULY 30, 1966

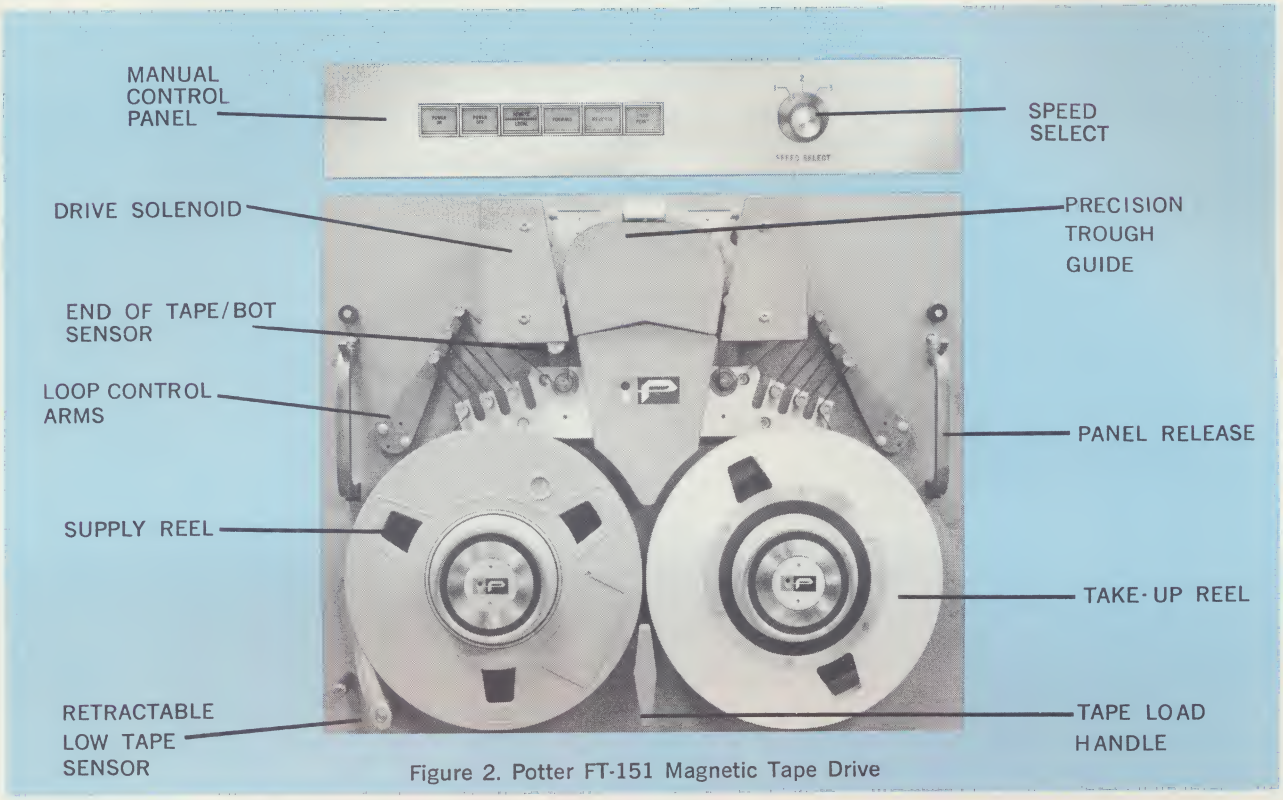


Figure 2. Potter FT-151 Magnetic Tape Drive

The standard transport provides three selectable tape speeds which are accurately maintained by a capstan servo system. Any combination of tape speeds desired is available from 15 ips, minimum, to 150 ips, maximum.

Two basic models are supplied — Model 151, equipped with 8½" reels, and Model 152, equipped with 10½" reels.

The unit features versatile operation, modular construction, front access to all components for ease of maintenance, and minimum depth behind the front panel for mounting in confined areas.

When the FT-151 or FT-152 transport is combined with Potter's FA-151 data electronics, the resulting magnetic tape transport system writes and/or reads digital data in IBM-compatible 7-channel and 9-channel (IBM 360 or ASCII-compatible) formats. Packing densities up to 800 bpi are standard. Units are available for ½" or 1" tape widths.

DRIVE SYSTEM

Low power solenoid-operated drive rollers, together with their corresponding drive capstans, provide reliable tape drive. The tape velocity is maintained within ±2% by the capstan servo feedback system. The capstan motor speed is monitored by a DC tachometer whose output voltage is compared with a regulated voltage from the transport drive electronics. Any voltage differential is fed through the servo feedback system to compensate tape speed variations.

An external speed control line permits a ±5 ips variation of nominal selected tape speed. The speed control is linear over the entire 10 ips range. A 1-volt change results in a 1 ips variation

*Trademark of Potter Instrument Company, Inc.

Lightweight, yet sturdy, loop control arms provide secondary bulk tape storage on each side of the magnetic head. This tape reservoir capacity accommodates high speed operation. The supply and take-up reels are under the direct control of heavy-duty DC servo motors. Changes in tape direction and velocity are sensed by the loop control arms which provide feedback control to the reel servos.

Low tape sensor and loop control arms are simultaneously retracted by the tape load handle for convenient reel loading and tape threading.

Interlocks on the tension arms automatically turn the transport off to prevent tape damage.

Potter QUICK-LOCK* reel hubs are available for fast, easy reel loading.

Figure 3. Model FT-152 Digital Tape Transport is equipped with 10½" reels.

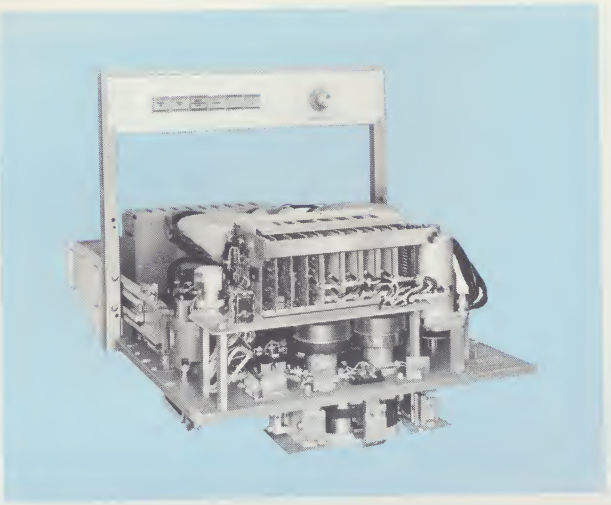


Figure 4. Rear view of FT-151

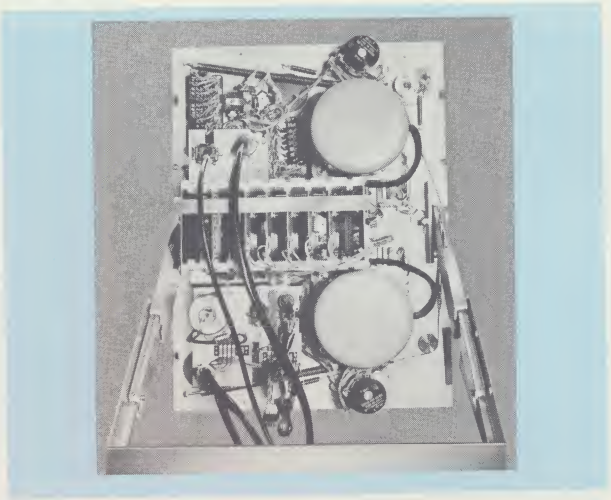


Figure 5. FT-152 Transport Assembly.

DRIVE ELECTRONIC AND POWER SUPPLY

Servo amplifiers and other electronic circuitry are solid state throughout, and are packaged on printed circuit cards mounted in the back of the transport. A separate power supply (PS 151) provides all voltages required to operate the transport from an input voltage of 12 volts. An optional manual control panel is available for the FT-151 Model; the manual control is built in on the FT-152 Model.

The following controls are included:

Power:	On, Off
Operation:	Remote/Local, Load Point
Direction:	FORWARD, REVERSE
Speed Select:	1 – 2 – 3

Input lines are provided for external control (see specifications).

EQUIPMENT

Potter FT-151 and FT-152 Geophysical Tape Transports include servo drive and control electronics in a single unit. An 8½" (FT-151) or 10½" (FT-152) IBM plastic take-up reel is supplied. An optional power supply (PS 151) is also available and is packaged separately.

Transport Accessories include:

- Manual Control Panel (FT-151 only; included with FT-152).
- IBM-compatible EOT/BOT photoreflective sensors, with amplifiers.
- IBM-compatible Write Lockout (File Protect) Switch.
- IBM-compatible QUICK-LOCK Reel Hubs.
- IBM-compatible Precision Metal Reel, 8½ or 10½ inch.
- Precision Tape Cleaner.
- Full Width Erase Head.
- Dustproof Dust Cover Door with Window (FT-151 only).
- DC to DC Power Supply (PS-151).
- 1" Tape Width.

Figure 6. Service Procedure. The FT-151 (shown) is mounted on slides which are secured to the mounting rack. The slides enable complete access to all components behind the front panel. Handle triggers release the transport so that it can be tilted to a horizontal position for quick easy servicing. As an added feature, a ¼" clearance at the rear and around the peripheral of the main transport panel is provided for mounting the transport in a carrying case.

TRANSPORT ACCESSORIES

READ/WRITE HEADS

A complete selection of Potter magnetic heads is available for IBM 7- or 9-channel TIAC 21 channel and other formats. Heads are all-metal and precision machined to stringent specifications for maximum tape life and minimum interchannel time displacement.

REELS AND HUBS

IBM-type reels and hubs are standard equipment on Potter transports for ½" tape. Potter NAB reels and QUICK-LOCK hubs are standard for 1" tape.

EOT/BOT SENSING

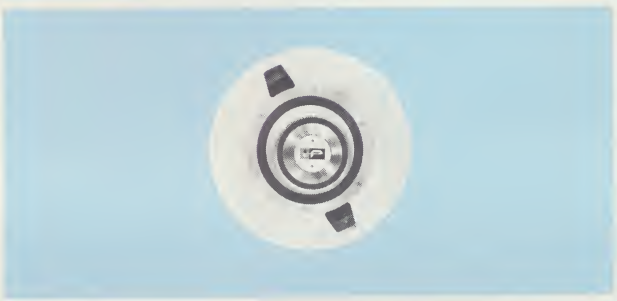
Photoreflective (IBM-type) end-of-tape and beginning-of-tape sensing is available for reliable tape control.

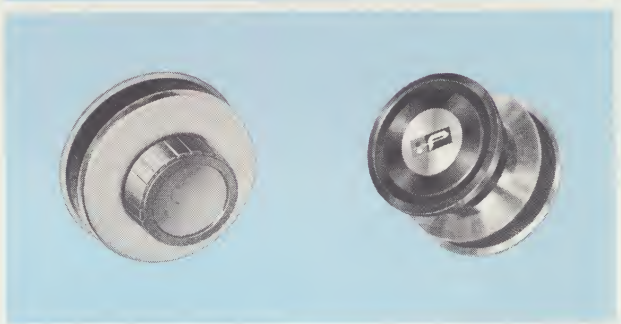
WRITE LOCK-OUT

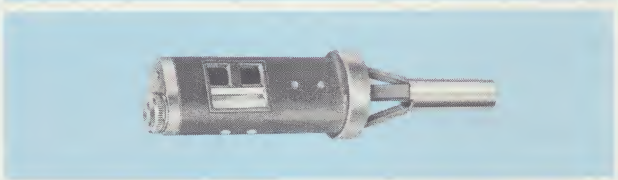
Transport design readily accommodates write lock-out (write enable) mechanism. New electro-magnetic, non-contact type write lock-out switch design gives improved file protect performance.

POWER SUPPLY (PS-151)

A separate DC to DC power supply, Model PS-151, provides all voltages required to operate the transport from an input voltage of 12 volts. Power consumption is extremely conservative for the high performance obtained.







SPECIFICATIONS

TAPE WIDTH	FT-151 — ½" or 1" tape on 8½" IBM-type reels; FT-152 — ½" tape on 10½" IBM-type reels
TAPE TYPE	3M8938 1.5 mil Mylar(TM) recommended
TAPE SPEED (Forward and Reverse)	FT-151 — 3 speeds (Max. ratio 4:1) in range of 15 to 150 ips — ½" tape (8½" reels). FT-152 — 3 speeds (Max. ratio 4:1) in range of 15 to 120 ips — 1" tape (8½" reels), ½" tape (10½" reels).
TYPICAL PERFORMANCE	
START TIME	50 ms, maximum { ½" tape, 8½" reels, below 120 ips 1" tape, 8½" reels, below 85 ips ½" tape, 10½" reels, below 97 ips
START DISTANCE (during 50 ms)	45 x ips/1000, max.
STOP TIME	100 ms, maximum { ½" tape, 8½" reels, below 120 ips 1" tape, 8½" reels, below 85 ips ½" tape, 10½" reels, below 97 ips
STOP DISTANCE	60 x ips/1000, max.
SPEED VARIATIONS — Long Term	±2%
SPEED VARIATIONS — Short Term (50 ms)	±4% less than 30 ips; ±2% above 30 ips
SKEW — STATIC (Normally compensated in high density application in amplifier)	$\frac{300}{\text{ips}}$ (microseconds)
SKEW — Instantaneous varying time displacement between any two channels reading on all 1's tape excluding pulse pairing effects	$\frac{250}{\text{ips}}$ (microseconds)
PROGRAM LIMITATIONS	With a 1 second or greater run command, tape may be reversed after 200 ms or greater stop, or may be reversed after any run command with a 500 ms stop.
POWER	
OPERATING (peak during start-up time)	10.5-14V DC — 350 watts maximum
OPERATING (steady running at 120 ips)	10.5-14V DC — 200 watts maximum
ENVIRONMENTAL CONDITIONS	
NON-OPERATING (excluding tape)	
TEMPERATURE	—40°F to +170°F
HUMIDITY	RH — up to 95%
SHOCK	5 g, 11 ms, all 3 axes
VIBRATION	5 — 35 cps, 1/32, single amplitude, 3 axes
OPERATING (with specified tape)	
TEMPERATURE	32°F to 125°F
HUMIDITY	RH — up to 90% at 100°F up to 80% at 125°F
DUST — TAPE TRANSPORT	Rubber gasketed, front cover door with window.

DIMENSIONS

TAPE TRANSPORT, FT-151 8½" reels	15¾" high, 19" wide, 9" maximum behind panel. (Excluding chassis slides.) 3½" maximum in front of panel (cover door).
TAPE TRANSPORT, FT-152 10½" reels	22¾" high, 17" wide, 12½" maximum behind panel.

WEIGHT

TRANSPORT AND COVER DOOR	
Model FT-151 8½" reels	95 lbs., maximum, transport; 5.5 lbs., maximum, cover door.
Model FT-152 10½" reels	110 lbs., maximum, transport.
INPUT/OUTPUT LOGIC	
INPUT LEVELS (available standard logics)	Logic "1" OV ±0.5V Logic "0" +5V (+4V min., +15 max.)
REPLY LINES	Power Broken Tape Interlocks Load Point — 1 = OV 0 = +5V ±1V EOT — 1 = OV 0 = +5V ±1V Low Tape Supply — Type C contact Write Lockout — Type A contact

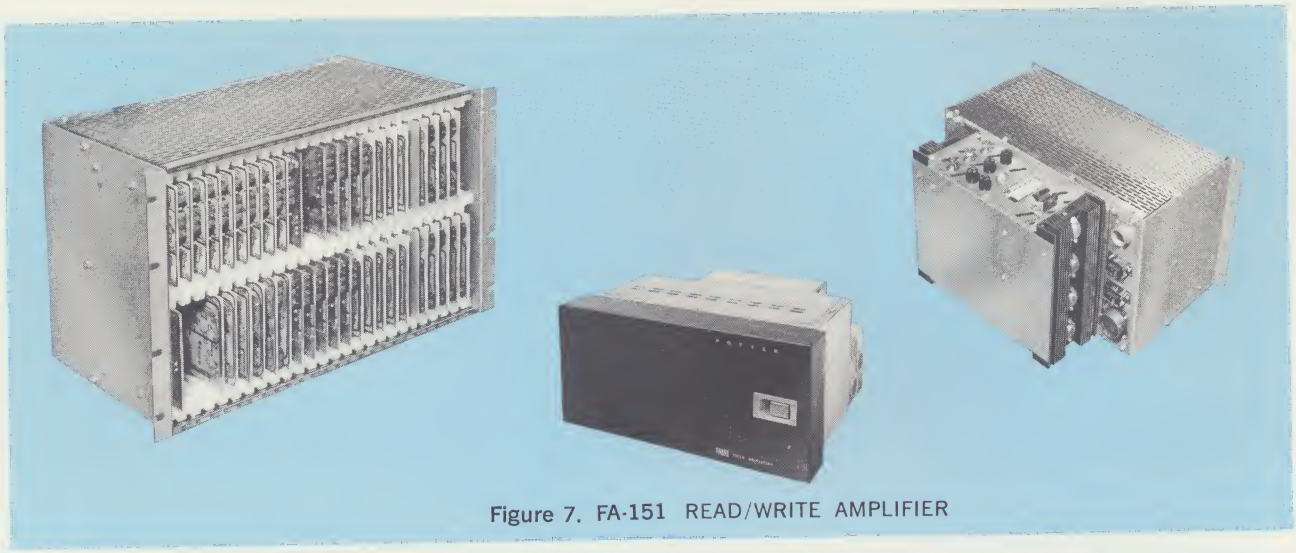


Figure 7. FA-151 READ/WRITE AMPLIFIER

DESCRIPTION

The FA-151 Read/Write Amplifier is designed for use with both FT-151 and FT-152 Tape Transports. The FA-151 Silicon Read/Write Amplifier records digital information on magnetic tape and check-reads this data to insure recording accuracy.

The FA-151 Amplifier System, designed for single and optional multi-speed applications, features complete IBM compatibility. All FA-151 7-channel, 200/556/800 bpi systems are prewired for immediate field expansion to 9-channel, 800 bpi compatible operation. Field retrofit of additional input/output channels is achieved by inserting extra printed circuit modules.

READ/WRITE AMPLIFIER

SINGLE-SPEED, TWO-SPEED OR THREE — SPEED, READ/WRITE AMPLIFIER SYSTEM, SKEW–COMPENSATED . . . For IBM 200/556/800 bpi 7- or 9-channel compatible operation. Completely pre-aligned for any specified tape speed from 15 to 150 ips. Amplifier includes full chassis prewiring for field expansion to IBM 9-channel, 800 bpi compatible operation. (Used with both FT-151 and FT-152.) Read Reverse Capability available on all amplifiers.

AMPLIFIER ACCESSORIES

7/9-Channel Optional Parity Check Module (Read).

7/9-Channel Optional Parity Generator Module (Write).

T20 — IBM 7- or 9-(ASCII) Channel Master Alignment Tape, 800 bpi (full width).

P12 — Amplifier Power Supply, for 12VDC Operation.

FEATURES

- Compatible with IBM 7-channel format for 200/556/800 bpi and IBM 9-channel format for 800 bpi
- Tape speed operation available for speeds between 15 and 150 ips
- Operation in simultaneous Read/Write mode
- Read/Reverse Capability
- Tape interchangeability between IBM-compatible tape units assured
- Information transfer rates up to 120 kc
- Read and Write amplifier automatically reset when power is turned ON
- Circuitry provides for accurate Write and Read skew alignment
- Individual gain and skew adjustment circuits standard on all multi-speed amplifiers
- Provision for writing the longitudinal redundancy check character (7- and 9-channel)
- Strobed Write input available
- Individual adjustments for pulse pairing compensation of Write amplifiers
- Write amplifier automatically reset when Write Enable is switched to "1" state
- Input circuit drive requirements less than 3 ma
- In-line Read output of all character bits and clock pulse output
- Dual threshold level standard
- Peak detectors employed in Read amplifiers
- Output circuits short-circuit-proof and drive load currents up to ±20 ma
- Provision for generation of lateral Write parity
- Provision for odd or even lateral parity check
- Provision made for external controls
  - Write Enable
  - Write Reset
  - Write Set
  - Read Reset
  - Density Select — 200/556/800 bpi
- Designed to minimize maintenance costs
  - solid-state silicon modular construction
  - accessible test points at front of chassis permit most adjustment to be made with modules in normal position
  - extension frames included provide complete exposure of all plug-in modules for circuit testing under actual operating conditions
  - front access for ease of maintenance in confined areas
- Compact packaging
  - 8¾" high, 12" deep
  - 19" rack mounting

SPECIFICATIONS FA-151 & FA-152 READ/WRITE AMPLIFIER

	7-Channel Compensated	9-Channel Compensated
PACKING DENSITY	200/556/800 bpi	800 bpi
WRITING MODE	NRZ Modified	NRZ Modified
TAPE SPEED (Single or Multiple)	15 to 150 ips (simultaneous Read/Write)	15 to 150 ips (simultaneous Read/Write)
READ DIRECTION	FWD	FWD
COMPATIBLE HEAD TYPES		
SIMULTANEOUS READ/WRITE OPERATION (DUAL GAP)	17555-7: 30 to 150 ips 18500-7: 15 to 30 ips	19500-9 Series 19500-9 Series
READ ONLY OPERATION (SINGLE GAP)	16432-7	19500-9 Series
WRITE ONLY OPERATION (SINGLE GAP)	16441-7	19500-9 Series
POWER SUPPLY	DC to DC converter separately packaged.	
DIMENSIONS	8¾" x 19" x 12"*	8¾" x 19" x 12"*
WEIGHT	35 lbs maximum	35 lbs maximum

INPUT/OUTPUT LINES

INPUT LINES

Input Levels (available standard logics)

Logic "1"	+5 to +15V DC
Logic "0"	Ground ±1.0V
Logic "1"	Ground ±1.0V
Logic "0"	+5 to +15V DC
Logic "1"	−5 to −15V DC
Logic "0"	Ground to ±1.0V
Logic "1"	Ground to ±1.0V
Logic "0"	−5 to −15V DC

Input Current

• **Write Inputs (7 and 9** lines)**	Level (RB)	A "1" is written when the input is switched from "0" to "1". Maximum 1 microsecond rise time for minimum voltage swing (3.5V). If a rectangular wave is used, the maximum duty cycle of the input is 50% of the pulse period. Minimum pulse width is 1 microsecond.
• **Write Clock**	Level	All Write inputs are simultaneously enabled when the Write Clock line is raised to the level corresponding to Logic "1" Level and a "1" is written by all Write input lines which are at Logic "1" Level.
• **Write Enable**	Level	Enabled with Logic "1" signal. (Simultaneous Erase head enable).
• **Write Reset**	Level	Reset with Logic "1" signal. Minimum pulse width is 2.0 microseconds.
• **Write Set (9-channel only)**	Level	Set with Logic "1" signal. Minimum pulse width is 2.0 microseconds.
• **Read Reset**	Level	Reset with Logic "1" signal. Minimum pulse width is 2.0 microseconds.
• **Density Select — 200**	Level	Selected with Logic "1" signal.
Density Select — 556	Level	Selected with Logic "1" signal.
Density Select — 800	Level	Selected with Logic "1" signal.
• **Second Speed Select**	Level	Selected with Logic "1" signal. (Optional)
Third Speed Select	Level	Selected with Logic "1" signal. (Optional)

*Depth includes mating cable connectors

**Additional cards required. If Write parity generation is selected as an option, the Write inputs must be present 1 microsecond prior to the Write Clock strobe.

SPECIFICATIONS continued . . .

OUTPUT LINES

Output Levels (available standard logics)

Logic "1"	+10V DC ±2.0V	20 ma source
Logic "0"	Ground —1.0V +1.5V	20 ma sink
Logic "1"	Ground —1.0V +1.5V	20 ma sink
Logic "0"	+10V DC ±2.0V	20 ma source
Logic "1"	—10V DC ±2.0V	20 ma source
Logic "0"	Ground +1.0V — 1.5V	20 ma sink
Logic "1"	Ground +1.0V — 1.5V	20 ma sink
Logic "0"	—10V DC ±2.0V	20 ma source

- **Read Outputs**
  - **Pulse Width** ..... 1 microsecond
  - **Rise Time** ..... 0.2 microsecond into 1000pf capacitance to ground
  - **Fall Time** ..... 0.3 microsecond into 1000pf capacitance to ground
- **Clock Output** ..... Same characteristics as Read Outputs. Occurs simultaneously with Read Outputs.
- **Lateral Parity, Odd or Even*** ..... Same characteristics as Read Outputs. Occurs simultaneously with Read Outputs.

***Additional card required.

POTTER MAINTENANCE ENGINEERING

Potter's Customer Service Engineers are staffed at strategic locations within the continental United States.

Staffed by highly-trained field representatives, these service centers are equiped to effect on-site installation of equipments and to perform quality repair, maintenance and overhaul.

Supplementing this capability, if a customer prefers to provide his own equipment support, Potter has established standard instruction courses to train customer personnel, either at Potter or in the field.

A Spare Parts Department, backed up by an extremely large inventory and streamlined order processing, is available for customer convenience and economy. This inventory permits the customer to realize virtual elimination of downtime as well as savings on spare parts dollars by offering expeditious delivery for replaceable parts. Delivery is available in 24 hours to meet customer emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

The Potter field service and logistics program is one of the finest in the EDP equipment industry. With reliable, quality-engineered equipment, supported by comprehensive field service, Potter guarantees satisfaction.

SALES OFFICES

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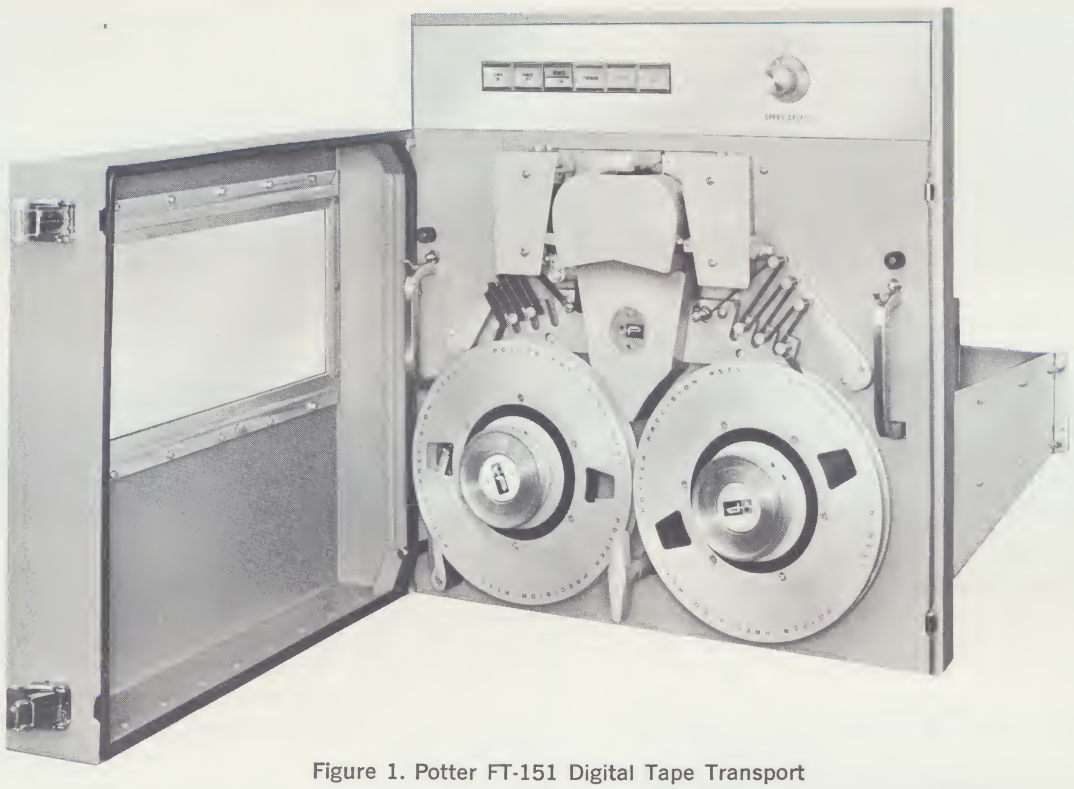

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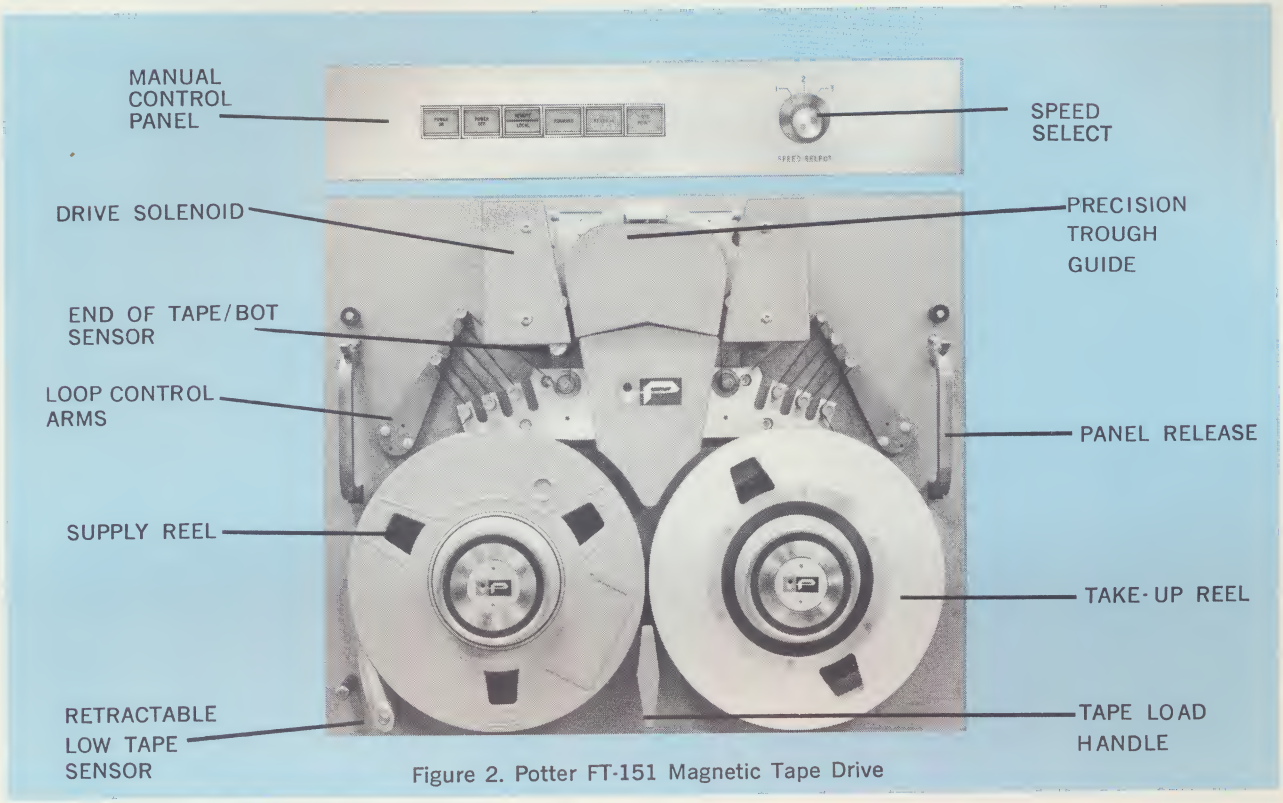

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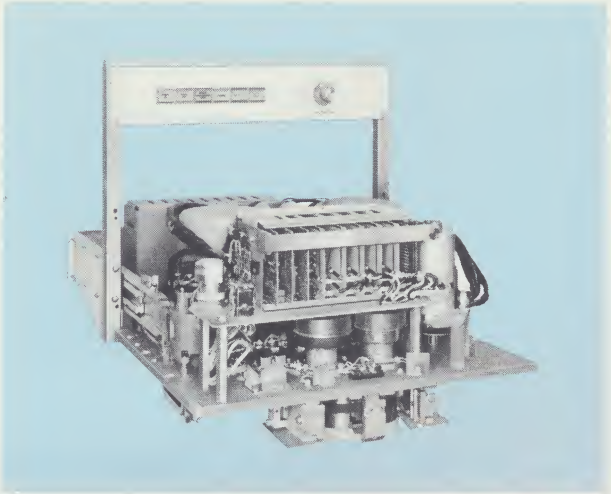
Potter QUICK-LOCK* reel hubs are available for fast, easy reel loading.

Figure 3. Model FT-152 Digital Tape Transport is equipped with 10½" reels.



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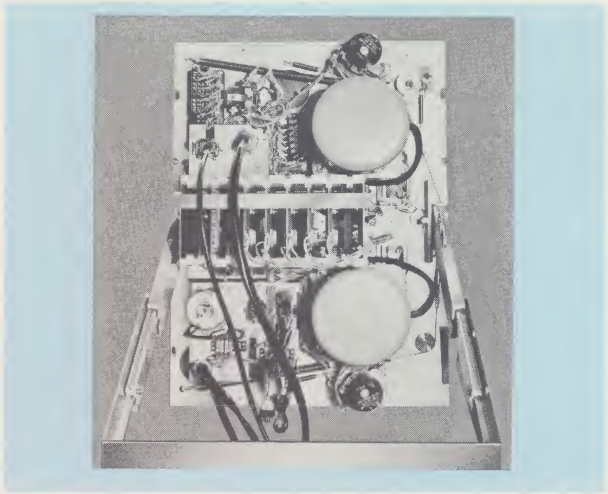

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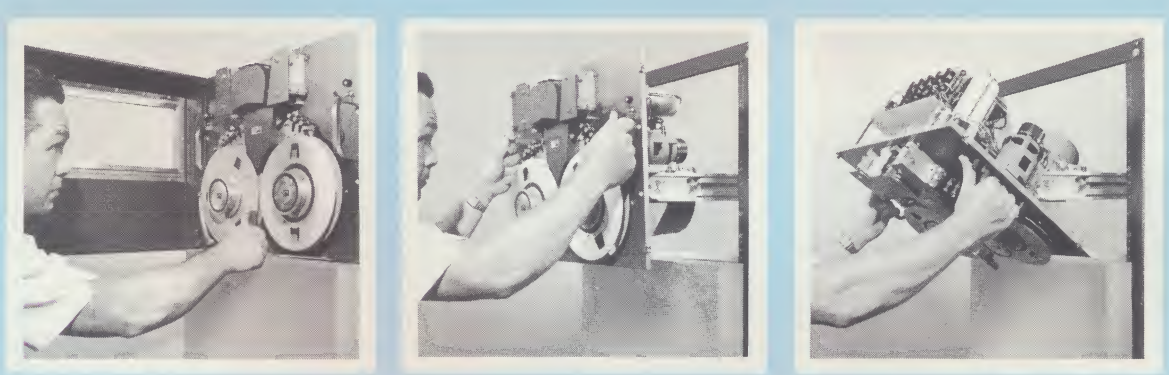
- IBM-compatible Write Lockout (File Protect) Switch.
- IBM-compatible QUICK-LOCK Reel Hubs.
- IBM-compatible Precision Metal Reel, 8½ or 10½ inch.
- Precision Tape Cleaner.
- Full Width Erase Head.
- Dustproof Dust Cover Door with Window (FT-151 only).
- DC to DC Power Supply (PS-151).
- 1" Tape Width.



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A complete selection of Potter magnetic heads is available for IBM 7- or 9-channel TIAC 21 channel and other formats. Heads are all-metal and precision machined to stringent specifications for maximum tape life and minimum interchannel time displacement.

REELS AND HUBS

IBM-type reels and hubs are standard equipment on Potter transports for ½″ tape. Potter NAB reels and QUICK-LOCK hubs are standard for 1″ tape.

EOT/BOT SENSING

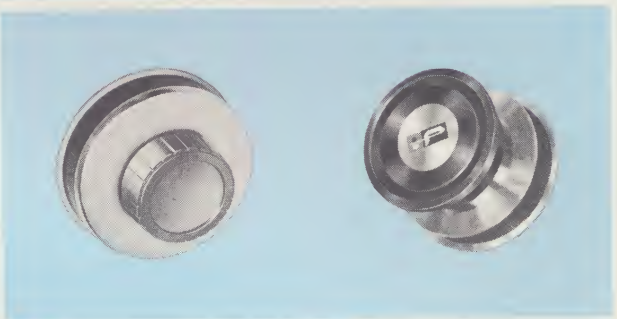
Photoreflective (IBM-type) end-of-tape and beginning-of-tape sensing is available for reliable tape control.

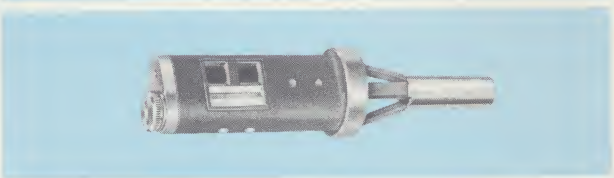
WRITE LOCK-OUT

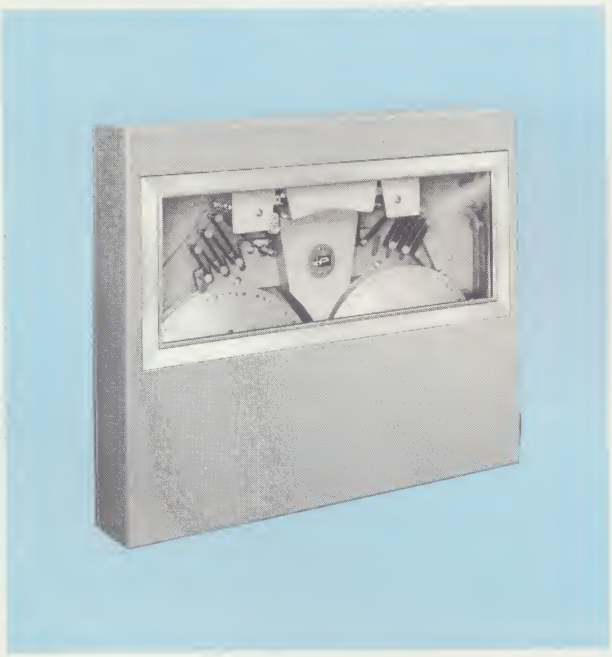
Transport design readily accommodates write lock-out (write enable) mechanism. New electro-magnetic, non-contact type write lock-out switch design gives improved file protect performance.

POWER SUPPLY (PS-151)

A separate DC to DC power supply, Model PS-151, provides all voltages required to operate the transport from an input voltage of 12 volts. Power consumption is extremely conservative for the high performance obtained.







SPECIFICATIONS

TAPE WIDTH — FT-151 — ½" or 1" tape on 8½" IBM-type reels; FT-152 — ½" tape on 10½" IBM-type reels

TAPE TYPE — 3M8938 1.5 mil Mylar(™) recommended

TAPE SPEED (Forward and Reverse) — FT-151 — 3 speeds (Max. ratio 4:1) in range of 15 to 150 ips — ½" tape (8½" reels). FT-152 — 3 speeds (Max. ratio 4:1) in range of 15 to 120 ips — 1" tape (8½" reels), ½" tape (10½" reels).

TYPICAL PERFORMANCE

START TIME — 50 ms, maximum { ½" tape, 8½" reels, below 120 ips; 1" tape, 8½" reels, below 85 ips; ½" tape, 10½" reels, below 97 ips }

START DISTANCE (during 50 ms) — 45 x ips/1000, max.

STOP TIME — 100 ms, maximum { ½" tape, 8½" reels, below 120 ips; 1" tape, 8½" reels, below 85 ips; ½" tape, 10½" reels, below 97 ips }

STOP DISTANCE — 60 x ips/1000, max.

SPEED VARIATIONS — Long Term — ±2%

SPEED VARIATIONS — Short Term (50 ms) — ±4% less than 30 ips; ±2% above 30 ips

SKEW — STATIC (Normally compensated in high density application in amplifier) — $\frac{300}{ips}$ (microseconds)

SKEW — Instantaneous varying time displacement between any two channels reading on all 1's tape excluding pulse pairing effects — $\frac{250}{ips}$ (microseconds)

PROGRAM LIMITATIONS — With a 1 second or greater run command, tape may be reversed after 200 ms or greater stop, or may be reversed after any run command with a 500 ms stop.

POWER

OPERATING (peak during start-up time) — 10.5-14V DC — 350 watts maximum

OPERATING (steady running at 120 ips) — 10.5-14V DC — 200 watts maximum

ENVIRONMENTAL CONDITIONS

NON-OPERATING (excluding tape)

TEMPERATURE — −40°F to +170°F

HUMIDITY — RH — up to 95%

SHOCK — 5 g, 11 ms, all 3 axes

VIBRATION — 5 — 35 cps, 1/32, single amplitude, 3 axes

OPERATING (with specified tape)

TEMPERATURE — 32°F to 125°F

HUMIDITY — RH — up to 90% at 100°F; up to 80% at 125°F

DUST — TAPE TRANSPORT — Rubber gasketed, front cover door with window.

DIMENSIONS

TAPE TRANSPORT, FT-151 8½" reels — 15¾" high, 19" wide, 9" maximum behind panel. (Excluding chassis slides.) 3½" maximum in front of panel (cover door).

TAPE TRANSPORT, FT-152 10½" reels — 22¾" high, 17" wide, 12½" maximum behind panel.

WEIGHT

TRANSPORT AND COVER DOOR

Model FT-151 8½" reels — 95 lbs., maximum, transport; 5.5 lbs., maximum, cover door.

Model FT-152 10½" reels — 110 lbs., maximum, transport.

INPUT/OUTPUT LOGIC

INPUT LEVELS (available standard logics) — Logic "1" OV ±0.5V; Logic "0" +5V (+4V min., +15 max.)

REPLY LINES — Power; Broken Tape Interlocks; Load Point — 1 = OV 0 = +5V ±1V; EOT — 1 = OV 0 = +5V ±1V; Low Tape Supply — Type C contact; Write Lockout — Type A contact

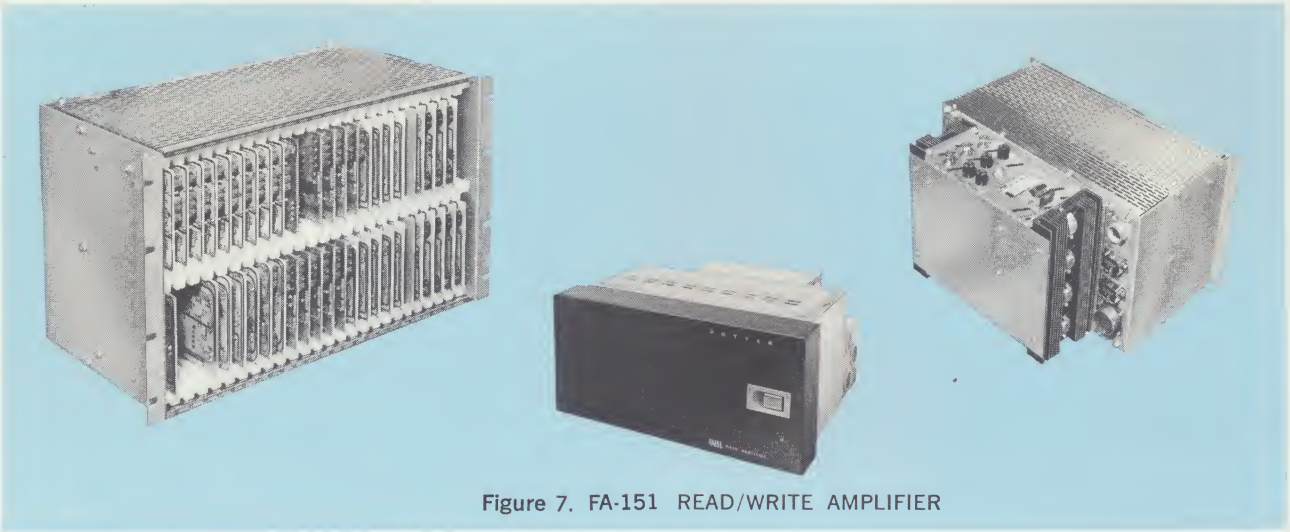


Figure 7. FA-151 READ/WRITE AMPLIFIER

DESCRIPTION

The FA-151 Read/Write Amplifier is designed for use with both FT-151 and FT-152 Tape Transports. The FA-151 Silicon Read/Write Amplifier records digital information on magnetic tape and check-reads this data to insure recording accuracy.

The FA-151 Amplifier System, designed for single and optional multi-speed applications, features complete IBM compatibility. All FA-151 7-channel, 200/556/800 bpi systems are prewired for immediate field expansion to 9-channel, 800 bpi compatible operation. Field retrofit of additional input/output channels is achieved by inserting extra printed circuit modules.

READ/WRITE AMPLIFIER

SINGLE-SPEED, TWO-SPEED OR THREE — SPEED, READ/WRITE AMPLIFIER SYSTEM, SKEW–COMPENSATED . . . For IBM 200/556/800 bpi 7- or 9-channel compatible operation. Completely pre-aligned for any specified tape speed from 15 to 150 ips. Amplifier includes full chassis prewiring for field expansion to IBM 9-channel, 800 bpi compatible operation. (Used with both FT-151 and FT-152.) Read Reverse Capability available on all amplifiers.

AMPLIFIER ACCESSORIES

7/9-Channel Optional Parity Check Module (Read).

7/9-Channel Optional Parity Generator Module (Write).

T20 — IBM 7- or 9-(ASCII) Channel Master Alignment Tape, 800 bpi (full width).

P12 — Amplifier Power Supply, for 12VDC Operation.

FEATURES

- Compatible with IBM 7-channel format for 200/556/800 bpi and IBM 9-channel format for 800 bpi
- Tape speed operation available for speeds between 15 and 150 ips
- Operation in simultaneous Read/Write mode
- Read/Reverse Capability
- Tape interchangeability between IBM-compatible tape units assured
- Information transfer rates up to 120 kc
- Read and Write amplifier automatically reset when power is turned ON
- Circuitry provides for accurate Write and Read skew alignment
- Individual gain and skew adjustment circuits standard on all multi-speed amplifiers
- Provision for writing the longitudinal redundancy check character (7- and 9-channel)
- Strobed Write input available
- Individual adjustments for pulse pairing compensation of Write amplifiers
- Write amplifier automatically reset when Write Enable is switched to "1" state
- Input circuit drive requirements less than 3 ma
- In-line Read output of all character bits and clock pulse output
- Dual threshold level standard
- Peak detectors employed in Read amplifiers
- Output circuits short-circuit-proof and drive load currents up to ±20 ma
- Provision for generation of lateral Write parity
- Provision for odd or even lateral parity check
- Provision made for external controls
  - Write Enable
  - Write Reset
  - Write Set
  - Read Reset
  - Density Select — 200/556/800 bpi
- Designed to minimize maintenance costs
  - solid-state silicon modular construction
  - accessible test points at front of chassis permit most adjustment to be made with modules in normal position
  - extension frames included provide complete exposure of all plug-in modules for circuit testing under actual operating conditions
  - front access for ease of maintenance in confined areas
- Compact packaging
  - 8¾" high, 12" deep
  - 19" rack mounting

SPECIFICATIONS FA-151 & FA-152 READ/WRITE AMPLIFIER

	7-Channel Compensated	9-Channel Compensated
PACKING DENSITY	200/556/800 bpi	800 bpi
WRITING MODE	NRZ Modified	NRZ Modified
TAPE SPEED (Single or Multiple)	15 to 150 ips (simultaneous Read/Write)	15 to 150 ips (simultaneous Read/Write)
READ DIRECTION	FWD	FWD
COMPATIBLE HEAD TYPES		
SIMULTANEOUS READ/WRITE OPERATION (DUAL GAP)	17555-7: 30 to 150 ips 18500-7: 15 to 30 ips	19500-9 Series 19500-9 Series
READ ONLY OPERATION (SINGLE GAP)	16432-7	19500-9 Series
WRITE ONLY OPERATION (SINGLE GAP)	16441-7	19500-9 Series
POWER SUPPLY	DC to DC converter separately packaged.	
DIMENSIONS	8¾" x 19" x 12"*	8¾" x 19" x 12"*
WEIGHT	35 lbs maximum	35 lbs maximum

INPUT/OUTPUT LINES

INPUT LINES

Input Levels (available standard logics)

Logic "1"	+5 to +15V DC
Logic "0"	Ground ±1.0V
Logic "1"	Ground ±1.0V
Logic "0"	+5 to +15V DC
Logic "1"	−5 to −15V DC
Logic "0"	Ground to ±1.0V
Logic "1"	Ground to ±1.0V
Logic "0"	−5 to −15V DC

Input Current

• **Write Inputs (7 and 9** lines)**	Level (RB)	A "1" is written when the input is switched from "0" to "1". Maximum 1 microsecond rise time for minimum voltage swing (3.5V). If a rectangular wave is used, the maximum duty cycle of the input is 50% of the pulse period. Minimum pulse width is 1 microsecond.
• **Write Clock**	Level	All Write inputs are simultaneously enabled when the Write Clock line is raised to the level corresponding to Logic "1" Level and a "1" is written by all Write input lines which are at Logic "1" Level.
• **Write Enable**	Level	Enabled with Logic "1" signal. (Simultaneous Erase head enable).
• **Write Reset**	Level	Reset with Logic "1" signal. Minimum pulse width is 2.0 microseconds.
• **Write Set (9-channel only)**	Level	Set with Logic "1" signal. Minimum pulse width is 2.0 microseconds.
• **Read Reset**	Level	Reset with Logic "1" signal. Minimum pulse width is 2.0 microseconds.
• **Density Select — 200**	Level	Selected with Logic "1" signal.
Density Select — 556	Level	Selected with Logic "1" signal.
Density Select — 800	Level	Selected with Logic "1" signal.
• **Second Speed Select**	Level	Selected with Logic "1" signal. (Optional)
Third Speed Select	Level	Selected with Logic "1" signal. (Optional)

*Depth includes mating cable connectors

**Additional cards required. If Write parity generation is selected as an option, the Write inputs must be present 1 microsecond prior to the Write Clock strobe.

SPECIFICATIONS continued . . .

OUTPUT LINES

Output Levels (available standard logics)

Logic "1"	+10V DC ±2.0V	20 ma source
Logic "0"	Ground —1.0V +1.5V	20 ma sink
Logic "1"	Ground —1.0V +1.5V	20 ma sink
Logic "0"	+10V DC ±2.0V	20 ma source
Logic "1"	—10V DC ±2.0V	20 ma source
Logic "0"	Ground +1.0V — 1.5V	20 ma sink
Logic "1"	Ground +1.0V — 1.5V	20 ma sink
Logic "0"	—10V DC ±2.0V	20 ma source

- **Read Outputs**
  - **Pulse Width** ..... 1 microsecond
  - **Rise Time** ..... 0.2 microsecond into 1000pf capacitance to ground
  - **Fall Time** ..... 0.3 microsecond into 1000pf capacitance to ground
- **Clock Output** ..... Same characteristics as Read Outputs. Occurs simultaneously with Read Outputs.
- **Lateral Parity, Odd or Even*** ..... Same characteristics as Read Outputs. Occurs simultaneously with Read Outputs.

***Additional card required.

POTTER MAINTENANCE ENGINEERING

Potter's Customer Service Engineers are staffed at strategic locations within the continental United States.

Staffed by highly-trained field representatives, these service centers are equiped to effect on-site installation of equipments and to perform quality repair, maintenance and overhaul.

Supplementing this capability, if a customer prefers to provide his own equipment support, Potter has established standard instruction courses to train customer personnel, either at Potter or in the field.

A Spare Parts Department, backed up by an extremely large inventory and streamlined order processing, is available for customer convenience and economy. This inventory permits the customer to realize virtual elimination of downtime as well as savings on spare parts dollars by offering expeditious delivery for replaceable parts. Delivery is available in 24 hours to meet customer emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

The Potter field service and logistics program is one of the finest in the EDP equipment industry. With reliable, quality-engineered equipment, supported by comprehensive field service, Potter guarantees satisfaction.

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